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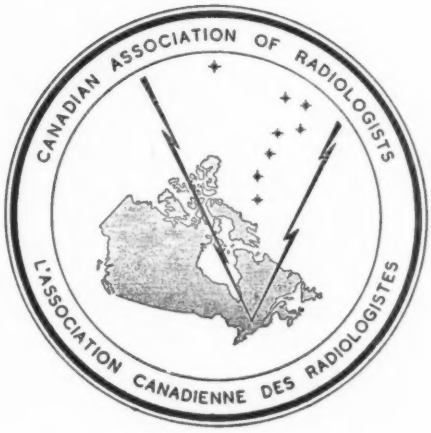

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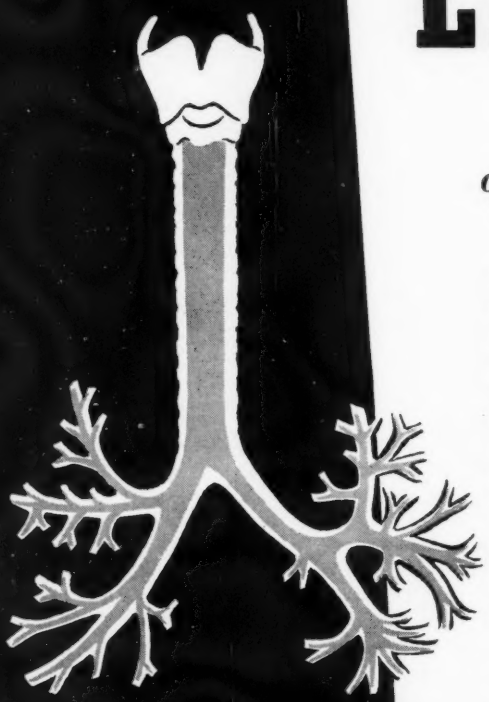

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1. Meakins, J. C.: The Practice of Medicine, ed. 5, St. Louis, The C. V. Mosby Company, 1950, p. 154.
2. *ibid.*, p. 268.
3. Bishop, P. A., and Lindskog, G. E.: Lung Abscess, in Pillmore, G. U.: Clinical Radiology, Philadelphia, F. A. Davis Company, 1950, vol. 1, p. 339.

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THE JOURNAL OF THE
CANADIAN ASSOCIATION OF RADIOLOGISTS

Volume VI March 1955 Number 1

GORDON EARLE RICHARDS — A LITTLE ABOUT HIS LIFE AND TIMES*

W. A. JONES, M.D.,
Kingston, Ontario

A few weeks ago I was favoured by being asked to give the Gordon Richards Memorial Lecture for 1955. There was no restriction placed upon the subject matter of the lecture. I was told that I could talk about any subject that interested me. What better subject, therefore, can there be for this particular lecture than Gordon Earle Richards himself, an outstanding Canadian of the second quarter of this century.

It is customary on occasions such as this to speak first about the distinguished person whom the lecture memorializes. Then one adds a scientific or literary discourse as a sort of part two of the lecture. To-day I am going to spend our time in talking about Richards. However, in order to fulfill the tradition of the second part, I would like you to consider a recent paper of mine, "The Teaching of Undergraduate Radiology at Queen's University," published in the last March issue of the Canadian Medical Association Journal.† It has not been presented before a meeting and it might well be considered as forming the second part of this address. Richards, I think, would have liked it because he was much interested in radiological education. Time does not permit the reading of it on this occasion, but I could wish that you might read it yourselves.

To-day I want to try to tell you something about Richards, as I knew him. I cannot hope to give you a really adequate picture of him. I do want to tell you some of my own recollections of him and a little about some of his friends and his work. This will be a homely sort of talk; one, I am afraid, that makes a great deal of use of the first personal pronoun. That, unfortunately, is necessary in the intimate kind of talk on which I now venture.

Richards, lately familiar to many of you, a stranger to some of you, and too soon, already, quite unknown to a few of you, I have known and highly esteemed. He had an inner warmth that at times would burst through his natural reserve and show itself in genuine friendliness. I felt that he was my friend. He and one of his contemporaries, that genial Scotsman, Howard Pirie, have influenced my own radiological career more than other men, for they were my teachers.

It is helpful to compare contemporary events and figures in order to place an individual in his proper setting. So, you will bear with me when I mention these things while trying to show part of the background of the changing picture of a man's life.

The North West Rebellion occurred in 1885. This same year Gordon Earle Richards was born at Lyn, a little place in Ontario, lying about four miles north of the St. Lawrence River, not far from the heart of the Thousand Islands. Recently I made a special trip to Lyn to see what kind of a place such a man came from. I'll tell you about that presently.

Let us now back track for the moment. A few years before Richards' birth, there were born two men who, like Richards, were destined to make their marks upon early Canadian radiology. On Christmas Day in the year 1875 at Dundee in Scotland, Alexander Howard Pirie first saw the light of day and a little later at Grenville, Quebec, in May, 1882, Leo E. Pariseau was ushered into a rapidly changing world. In later years Richards came to know these men rather well. The dry Scot's wit of Pirie and the rather volcanic, irrepressible, keen, cultured mind of Pariseau were much appreciated by Richards. Many a time have I heard him chuckle over their outstanding and very human qualities. Richards was also able to appreciate their worth and their contributions to early Canadian radiology. Both Pariseau and Pirie were justly recognized as "characters" in their own right. Besides their very worthy efforts professionally, they were known and well liked because of their interesting and colourful personalities, which, once known, were thoroughly appreciated.

In 1891, Sir John A. MacDonald, first Premier of Canada, died. Four years later, 1895, when Richards was ten years old, there was discovered something new, something which, in the language of this day and age, if such language had been in use then, would have been described as "out of this world." Just sixty years ago, this year of our Lord

*Presented at Annual Meeting, The Canadian Association of Radiologists, January 11, 1955, Ottawa.
† Republished on page of this issue.

1955, this new thing came into the known world. About three months later, in January, 1896, a distinguished, black-whiskered scientific gentleman, dressed in a Prince Albert frock coat (the very essence of that sartorial dignity which, along with policemen's helmets, vanished about the First Great War), delivered his famous preliminary communication on a new kind of ray — the X-ray. Roentgen had launched the rocket which may some day either take us to the stars or finish our civilization.

The South African War commenced in 1899 when Richards was just fourteen years of age and attending High School in Athens, Ontario. One can imagine him asking his father, as boys did ask their fathers in those days, whether, if the war lasted another year or two, he could go as a bugler. Buglers were heroes to young lads then, as space-fighters are to the boys of to-day.

In 1908 Richards graduated from the University of Toronto as the Gold Medallist of his year. He practiced first in British Columbia and was the medical officer at a mining camp in the northern part of the province. In British Columbia he became associated with Dr. C. W. Prowd, a charming, well-liked man, who afterwards became the radiologist at St. Paul's Hospital in Vancouver. In later years Dr. Prowd preferred to do all his travelling by air, while Dr. Whitelaw, another radiologist in Vancouver, was allergic to air travel and always used the train. Richards used to like to tell about a convention some of us attended in Chicago in 1937. He met Prowd as he got on the elevator in the Palmer House. Says Richards, "Hello, Prowd, did you fly down?" "Hell, yes," says Prowd. As he got off the elevator he met Whitelaw. Says Richards, "Hello, Whitelaw, did you fly down?" "Hell, no", says Whitelaw. I can still hear Richards tell that anecdote and hear his not too infrequent chuckle as he told it. Richards was a very serious man, but he did have his moments of humour.

I well remember a quip that he made in an address of welcome to the members of the Radiological Society of North America, meeting in Toronto in 1928. This was in the days of prohibition in the United States. In those days it was the lucrative and kindly custom to smuggle thousands and thousands of bottles of excellent Canadian Whiskey across that invisible line that bounds our country to the south. In his inimitable way, parodying a famous phrase of Kipling's, Richards referred to it as "our far-flung bottle line." This was a rather typical example of his dry sense of humour.

On August the fourth, 1914, came the First Great War. Soon Richards was a lieutenant in

As a Lieutenant of the Royal Army Medical Corps.

the Royal Army Medical Corps. There is a story that he and Prowd flipped a coin as to which would have the privilege of army service. Richards won. He was stationed in the Near East during the Dardanelles Compaign. He saw service as a radiologist with 21 General Hospital R.A.M.C., with duty on the Isle of Lemnos and at Alexandria in Egypt. Pariseau and Pirie also found themselves overseas in army service.

The July, 1916, number of the British Medical Journal published an article, "Localization of Foreign Bodies," by Lieut. G. E. Richards, R.A.M.C. This would appear to be Richards' first flight into medical literature. He describes a simple method of fluoroscopic localization of a foreign body by means of shifting a flat piece of wood in which is imbedded a flat piece of metal, having the diameter of a shrapnel bullet.

That same year, 1916, the British Medical Journal records:

> Notes on an intensifying screen for use with X-ray plates.

An article on "The Soldier's Heart," by Sir James Mackenzie.

An article, "From the Visible to the Gamma Ray Spectrum," with a long paragraph stressing the dangers of X-rays."

An article on the "Physics of a Surgical Dressing," by Lt. Col. A. Primrose, C.A.M.C.

(Primrose had been one of Richards' teachers).

Later in August, 1917, Richards published an article on "X-ray Reports" in the Journal of the Royal Army Medical Corps. He described a method of making a miniature print of the X-ray plate so that a finished reproduction could accompany the X-ray report to the surgical wards. This brings to mind that during the First World War it became routine to make prints of X-ray plates. The X-ray report was typed or written upon the backs of these prints and so passed on to the surgeon. I well remember doing this and reporting plates in such a way. I still have in my possession the print of an injured foot with the report typed on the back and signed by Pirie. Richards' method was to make a reduced-size print by means of a special field-made apparatus which he used. He recommended it not only for use in making a report, but also as a convenient method of keeping X-ray records in small space, instead of the storage of bulky glass X-ray plates. This, of course, was the forerunner of the latest method of copying X-ray films for preservation and storage on roll films.

Richards returned to Canada in 1917 to become the first radiologist of the Toronto General Hospital. To this position he brought an indefatigable store of energy and the gift of originality. At thirty-two years of age he took over this charge. For thirty-two years he was the guiding genius of the department of radiology of that great institution.

Pariseau returned from the war, going to Hotel Dieu de Montreal and later Pirie returned to the Royal Victoria Hospital. These three men, Richards, Pariseau and Pirie, for years exercised a profound effect upon Canadian radiology.

In addition to his marked success as director of the department of radiology, Richards also instructed many aspiring young medical men in the art of radiology. Many radiologists practicing today owe their start in their chosen life work to the kindness and encouragement so readily given to them by Richards.

Also, during the late war, over a period from 1940 to 1945, he gave freely of his time and energy to instruct young radiologists for the defence forces. To his very great sorrow, his son Stuart was killed in action, serving with the Air Force.

In a paper published in 1925 on "Radiation Treatment of Benign Disease of the Female Pelvis," Richards discusses the actions of both X-rays and radium in these conditions. It is quite interesting to note that in describing the method of treating fibrosis uteri, the single X-ray dose is described as follows:

"Spark Gap, 9 inches; milliamperes, 5; filters, 6mm. aluminum; time, 15 minutes; distance, 10 inches."

In these days of accurately measured high kilovoltage, long target-skin distances, heavy filtration and dosimeters so conveniently measuring the roentgens, the above factors seem to belong to an almost prehistoric past. Yet they were still in use half-way along the sixty-year period of X-ray history which we complete this year.

To-day it seems a long way from the days of primary and secondary coils, gas tubes, mercury interrupters and glass X-ray plates to the streamlined, shock-proof, automatically relayed gadgets and precision X-ray machines and films of to-day. Yet Richards, like some other few of us, started his X-ray work with these machines and just a little while ago, near the end of the last Great War, we lost Pirie who actually commenced his X-ray work about a year following Roentgen's discovery.

Pirie at 69 and Pariseau at 62 both died in 1944 and left us with a distinct feeling of loss. Two of our outstanding pioneers had become memories.

One of Richards' earliest papers was on "Physiotherapy or Treatment by Physical Agents." This reminds us that in the earlier days of radiology in Canada nearly all radiologists practiced physiotherapy in addition to radiology. Indeed, many of our French-Canadian colleagues still do. The paper is undated but almost certainly was published in the early twenties. In a short paper he covers the even then wide field of physiotherapy in a lucid, informative manner. In reading the paper one is impressed with Richards' "down-to-earthness" in the common-sense, logical and modest way in which he handles his subject. His tolerant and fair summing up of results of treatment were typical of him. One feels that a quotation from this paper will serve to introduce the present generation of radiologists to one facet of Richards' character well worthy of emulation. I wish that it were possible for me to imitate Richards' rather crisp but intimate method of speech and delivery in order that you might appreciate what I mean by the phrase, "down-to-earthness."

In describing the results of treatment of pneumonia with diathermy, a procedure which had been highly recommended by Dr. H. E. Stewart, he says in part as follows:

> "The method and technique described by Dr. Stewart were followed carefully and during the winter each alternate pneumonia patient received this treatment in addition to the usual routine, while the other alternate patients did not receive diathermy. At the end of the period our group of cases had one death more to record than those who had not received diathermy.
>
> The only conclusion we felt justified in drawing from this work was that diathermy did not materially affect the death rate of lobar pneumonia in the type of case met with in the Public Wards of a General Hospital. The reason is probably found in the fact that the average day of admission of these patients was the fifth day of the disease. The patients, therefore, were very seriously ill and some were almost moribund.
>
> A few felt benefit from the treatment in the sense of added comfort, relief of dyspnoea, etc., but in others we concluded that this was more than offset by the inconvenience and consequent fatigue of arranging the electrodes and giving the rather prolonged treatment. But since Dr. Stewart specifically states that the treatment must be given during the first 48 hours and since in our cases it was not possible to start treatment until the fifth day, we do not feel in a position to make any statement on the merits of the method other than the above. This will have to come from those who have an opportunity of using it in the early stage of the disease."

Those of you who have been schooled in the sulpha drug and antimicrobic treatment of pneumonia may reflect that the pneumonia patient is more fortunate nowadays.

"The Systematic Study and Classification of Stereograms of the Chest" was published in the Canadian Medical Association Journal in 1927. In this there is an insistence on careful review, in sequence, of the different main land marks of the chest when examining a film. This is a common enough procedure to-day but it was not so then. It was characteristic of Richards to be painstaking, logical and analytical in his examination of any matter.

In this paper Richards mentions "massive collapse." To-day the word "collapse" or "atelectasis" is on every medical tongue. It is somewhat difficult to realize that just previous to, and indeed for some time later than this paper of Richards' in 1927, this was not so. In those days almost anything that happened in the chest after an operative procedure, if it escaped being labelled "pneumonia," was almost certainly called an "embolus." Atelectasis was something that occurred in the newborn.

Curiously enough, in his paper, under infections, the matter of fungus infection of the lung is not mentioned. One recollects, however, that fungus infections, which now interest so many people, were little known in those days.

Richards published an article on "Osteochondritis Dissecans" in the American Journal of Roentgenology of March, 1928. This was a little-known condition at that time. However, Richards pointed out that Konig had described it in 1887 and Freiberg and Woolley again in 1910. Several other papers were published later. Richards illustrated four of his cases of osteochondritis dissecans of the knee, described one of the elbow and illustrated a case of this condition in the hip joint.

It is interesting to note that in the discussion that followed this paper of Richards' at the American Roentgen Ray Society meeting in Montreal in 1927, one of our old and respected confreres from Philadelphia stated — "On several occasions I have found a small, round body, about the size of the end of a lead pencil, in the region of the tip of the acetabulum and the upper surface of the head of the femur. I don't know what this is. It may be something which is well known, with which I am not familiar." Our own old friend of those days, Howard Pirie, in referring to the above "small, round body" stated — "I have been very much interested in it myself. I have at least eight cases of it. Sometimes it is on one side only but most frequently it is on both sides. At the present time we are calling it a sesamoid bone in the reflected head of the rectus femoris." Others present also mentioned this curious bone.

How strange to the ears of most of you that the many studious and knowledgeable men who attended this meeting should have devoted so much time to the discussion of such a common extra ossicle as the acetabular bone. To-day the occurrence of this bone is such common knowledge that its presence is ignored, except that when seen it is classified subconsciously as non-pathological. I mention it as one illustration of the, at first, slow build-up of radiological knowledge. That which was a mystery in the early days is now often commonplace. That which is a mystery to-day may be commonplace to-morrow. Many of us might be a good deal more humble to-day if we could foretell what our successors of twenty-five years to come will think of some of our present ideas.

In one of his earlier papers Richards discusses the "Co-Relation of Results of Goitre Treatment by Surgical and X-ray Methods." This paper was given at Vancouver at the Canadian Medical Association meeting, 23 June, 1920.

There is a very scholarly description of the histological characteristics of the thyroid gland and its pathological modifications. The physiological properties of X-rays are discussed. A statement which most of you will find curious but which was widely held for many years is noted. "It is a well known fact to all by this time that when any living tissue is exposed to X-rays or radium the first effect is stimulation." The destructive effect is then mentioned and a series of 300 cases treated by X-rays is presented. The summary is captioned in eight points, bearing on the marked improvement or temporary improvement of a large percentage of cases of hyperthyroidism.

Again later in a paper on "Radium — Its Proven Uses and Limitation in Therapy," published in 1931, Richards states the case for radiation treatment of Hyperthyroidism. He says in part — "Hyperthyroidism is a disease in which treatment by X-rays and radium has not received the degree of acceptance by the profession at large which the results warrant."

Those of you who are old enough to remember will recall that the controversy of X-rays versus surgery in the treatment of hyperthyroidism persisted for many years. I recall that some years before the last war, Richards said to me, "The truth of the matter is, that in these days about the only patients that are being referred for radiation treatment of toxic goitre are medical men, their wives, sweethearts, children and close relations."

Nowadays, of course, the physician at least supports the beneficient effect of radiation. This is possibly because radiation has now been parcelled up into a neat little medicine called radioactive iodine which can be given with all the rites of orthodox medicine as ministered to by the internist.

In his later years most of the papers published by Dr. Richards dealt with the matter of radiotherapy. However, as late as January, 1938, in conjunction with Dr. A. C. Singleton, he published a paper on diagnosis, "Giant Cell Tumours of the Spine," and again in January, 1942, a paper, "A Discussion on Surveys of the Chest; with Comments on the 14 x 17" film used in the Canadian Army."

His last publication was on radiotherapy and was published in two parts in the British Journal of Radiology. This paper was the Skinner Lecture given at the Faculty of Radiologists meeting in England in May, 1947. The title of the paper was "Mammary Cancer; The place of Surgery and Radiotherapy in Its Management." This was a masterly piece of work, the result of many years of investigation, treatment and compilation of matters of infinite detail.

One aspect of Richards' attitude toward treatment was his willingness to change and modify treatment as experience led him to adopt new ideas. By this I would not have you think that his mind did readily flit from one idea to another. He did, however, readily adapt himself to new thought when such was logically acceptable. He was of an inventive and original turn of mind and made his own innovations.

About the end of the First Great War, at a time when the single intensifying screen had just come into use, he experimented with it and roll photographic film, for serial gastric work. In the early twenties he designed a gastric couch upon which the patient could be moved, centred and localized over a metal ring, for serial radiography of the stomach. A little later, in collaboration with his associate, Dr. W. H. Dickson, there was designed a complete serial gastric unit, motor driven, using thirty cassettes.

He was the Canadian pioneer in deep X-ray therapy. In the early twenties, in association with Mr. T. B. Hurst, he built his own, "homemade", 160 KV transformer with a 48-inch rectifying disc. In the late twenties he designed and had installed a filter indicator, on the control of a more modern therapy unit.

When one hears talk nowadays about low temperature surgery, it is interesting to recall that Richards, following the lead of Chamberlain, experimented with low temperature, 85°F, treatment of cancer patients, during the early days of the Second Great War. This method was, of course, the precursor of the "hibernation method" of performing heart surgery.

In a paper published in June, 1925, he described a method for the treatment of local recurrences in the skin in the management of breast carcinoma. He described a method of making a mould of the chest wall, using dental modelling compound to hold radium needles on the skin of the chest. Eight years later in a paper presented in Chicago, in September, 1933, he described a method of treating larger areas of the chest wall by means of a cotton jacket embroidered with staggered rows of radium needles. This performed a similar function to the dental wax mould, but was more comfortable and was designed to give a more even distribution of radiation.

All in all Richards published over fifty papers on radiological subjects. Some few of these were published in collaboration with his faithful associates, but nearly all of them were his own work.

The publication of papers, however, is only part of the work of a man. Papers are that part of his work that bubbles over, above and

beyond the call of enthusiasm. To really know a man you must see him on his daily round and watch him at his work. It was well worth while to follow Richards and watch him in his contact with patients and his fellows.

He was a man to admire for his tremendous capacity for work and detail, his thoroughness and scientific intensity and, with it all, a warm kindness for his patients and a tolerant attitude to his medical confreres. Singleton, his friend and associate for many years, records that some years before his death, "He was the guest of honour at a dinner where one hundred women, all former cancer patients with no recurrence in periods from five to seventeen years, celebrated most happily."

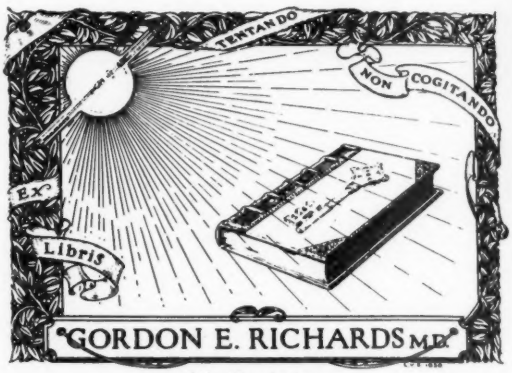
Dr. Richards' official positions included: Attending Radiologist-in-Chief, Toronto General Hospital; Director of Ontario Institute of Radiotherapy; Managing Director, Ontario Cancer Treatment and Research Foundation; and Professor of Radiology, University of Toronto.

He was the founder of the Canadian Association of Radiologists. His was the thought that brought us together in Toronto and sparked the formation of the national organization which has honoured him by instituting this Memorial Lecture in his memory.

At the peak of his professional career, far too young, he passed away. He died on the thirteenth of January, 1949, at the age of 64 years, following an illness due to aplastic anaemia, the result of exposure to the radium used by him in the treatment of literally thousands of patients.

Richards always looked forward to his one month of summer vacation on the Rideau Lakes. Here he secluded himself for four weeks and quite cut himself off from professional associations. He read the books he had wanted to read all year. He built boats, fished and did those other things he wanted to do. Then, refreshed, he plunged back into his work with all the vim and vigor which so characterized him.

Richards designed a very interesting and effective bookplate for the books of his library. The plate symbolized the legend of Roentgen's discovery of X-rays through the media of the Key, the Book and the Photographic Plate. This brings out another facet of Richards' character. Despite his scientific attitude and his insistence upon proof and accuracy, he had a feeling for the quasi-romantic aspect of science, the imaginary limbus that adds mystery to facts. He denied the truth of the Key and Book tale but he was nevertheless mightily interested in it as an intriguing sidelight.



His Bookplate.

He was much interested in a book to which I directed his attention. It was "The Lost Continent of Mu," a rather imaginary, or at least, a far-fetched, yet seemingly credible account of a lost continent of the Pacific. In return he referred me to Donnely's "Atlantis," a book supporting Solon's and Plato's tale of the lost continent of Atlantis in the Atlantic.

That was one of the things I liked about Richards. He was the type of medical scientist who could be critical and realistic professionally but who was also enough of a mystic to harbour a liking for unreal and unproven things. He liked to let fancy linger, at least occasionally and temporarily, on life's possibilities.

Once in a while, Richards allowed himself a degree of relaxation during the working months of his year. He lived in a delightful house on the edge of a golf course. Of his actual degree of prowess as a golfer, I have no knowledge. I played only one game with him. This was in the days when the name of Bobby Jones, of golfing fame, was a household word and babbled on the lips of even the young fry of the land. Richards was good enough to invite me for dinner, to be preceded by eighteen holes of golf. We spent a delightful afternoon on the links but I regret to record that neither of us covered himself with glory. At the end of the game we wended our way disconsolately to the Richards' door. There, to one of Richards' young hopefuls, I was introduced as Dr. Jones. "Are you Bobby Jones?," says the young one. Richards, gravely and very sternly said, "No, indeed, he is not Bobby Jones."

Now for a trip into yesterday — to Lyn.

Have you ever gone into a little village to inquire into the happenings of more than half a century ago? I recommend it as an adventure into improbability. It gives rise to rather interesting reflections upon the transience of human affairs. My quest was for someone about 70 years of age who could tell me about the life of Richards as a boy. I hoped to find

an old schoolmate. An easy task, one would think. I did not find one. I found a native of the village, an old gentleman of eighty, the surviving oldster of his generation still residing in the village, who remembered him and knew his father well. The school that Richards attended still serves as a school. It is an old four-room building of brown stone, strangely time defaced, and too soon falling into ruin; yet it was built only eighty-seven years ago, in 1867, the year of the Confederation of Canada, and had only been standing twenty-three years when the boy Richards entered it as a student. A block away is the solid and interesting grey limestone house where Richards was born. Up a side street (on the road to Athens, no less) is the quaint old stone church which he attended and of which his father was the minister for many long years. A region of curious names — nearby are the hamlets of Lillies and Tincap and not far away are Oakleaf, and Plum Hollow where the witch lived. Round about is a country of rolling hills, creeks, ponds, lakes and woodland. South is the great St. Lawrence and the Thousand Islands; an interesting country, well filled with hollows and ravines, farmlands, rocky hills and hills of rocks. At one point near Lyn, the farmland is so vastly irregular that the farm has been called "Crazy Acres."

The village skirts the bank of a stream known to the village simply as the "Creek" and I strongly suspect that in Richards' boyhood it was called the "Crick." This stream meanders along through deep twisting ravines to join with a couple of similar streams, just short of the St. Lawrence. Immediately beyond their confluences the waters enter the St. Lawrence near Butternut Bay. Butternut Bay! This name alone is sufficient to stir up nostalgic memories of boyhood and helps us to place Richards amongst the surroundings of his youth.

All in all, it was a great country for a boy to grow up in, with all the fishing and hunting territory that the heart could desire; a great country for playing cowboys and Indians. How Richards' heart must have gone back to it; how pleasant to have spent, as Singleton has put it, "A serene old age, in rural surroundings of which he had dreamed."

On Friday evening, the 28th of March, 1947, Queens University, at a special Convocation held in Grant Hall in Kingston, Ontario, honoured Dr. Richards by conferring on him the honorary degree of Doctor of Laws. The citation which immediately preceded the conferring of this well-merited dignity, coming as it did so close to the end of his career, makes a fitting conclusion to this Memorial Lecture.

Gordon E. Richards, M.B.(Tor.), LL.D, F.R.C.P.(C), F.A.C.R.

A casual photograph of Dr. Richards (left) and Principal Wallace (right), on the occasion of the conferring of the degree of Doctor of Laws by Queen's University.

Vice-Principal McNeill, in presenting Dr. Richards to Principal Wallace, spoke as follows:

> "Mr. Vice-Chancellor, in the name of the Senate of this University, I have the honour to present to you for the Degree of Doctor of Laws, honoris causa, Gordon Earle Richards, Doctor of Medicine, professor of radiology at the University of Toronto; director of the department of radiology at Toronto General Hospital; managing director of the Ontario Cancer Treatment and Research Foundation; a foremost Canadian scientist in cancer radiotherapy, internationally known as teacher, researcher, administrator, greatly serving mankind."

THE TEACHING OF UNDERGRADUATE RADIOLOGY AT QUEEN'S*‡

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"Come, come and sit you down; you shall not budge;
You go not till I set you up a glass
Where you may see the inmost part of you."
Hamlet, Act III, Scene IV.

At Queen's we devote a good deal of attention to the study of radiology. Undergraduates are taught the basic principles of this subject in the second year and again in the fourth and fifth years. In the sixth year they learn something of its practice. In the second year of medicine, x-ray physics is well and thoroughly presented by the Department of Physics. In the fourth year, eighteen hours are given over to lectures and demonstrations in diagnostic radiology. In the fifth year, eighteen hours are used for the teaching of therapeutic radiology and the radiological diagnosis of malignant disease. A further forty-two hours is given over to lectures and demonstrations in diagnostic radiology.

In the sixth year each student spends a week as a "shadow" in the division of Diagnostic Radiology and in the division of Therapeutic Radiology and in the Cancer Clinic. As a "shadow" he follows the radiologist during his daily routine. He sees fluoroscopy. He sits in on the routine interpretation of films. He is shown records and photographs of cancer patients. He sees patients and finds out how they are handled in both diagnosis and therapy. He watches the radiotherapy of cancer and of benign conditions. In addition to this, each student in turn presents the clinical aspect and or the radiological side of interesting cases, weekly, before a conference group of students.

The student is not taught radiology from the standpoint of the specialist. He is drilled over and over again in the recognition of the standard radiological findings in health and disease. He is encouraged to study medicine and surgery with radiology as a help. Diagnostic radiology is described as being one method of inspection. It is one way in which a picture of the diseased process shows. It is often a very important diagnostic feature. Occasionally it is the only diagnostic feature. It may be the least important part of the clinical picture.

We feel that when our students graduate they have a good grasp of the elementary points of diagnostic and therapeutic radiology. Our graduates, therefore, should know enough about radiology that they can use it usefully and assess radiological reports at their proper value. They should also have a picture of disease which complements other concepts acquired in the study of other branches of medicine.

We realize that there is a danger of oversimplification of radiology, by drilling students again and again in basic principles and standard aspects of the subject. To some students this has a tendency to make the whole affair seem too easy. However, we are secure in the thought that during the final year the student must serve as a "shadow" for a week in the department. During this week he gets, or should get, a true perspective. If perchance, he knows it all, this experience soon disillusions him. He finds that radiology is filled with many diagnostic problems, and is just as complicated as other fields of medicine. The experience is of course not always salutary and once in a while there returns, for further graduate medical training, one who after a short year or so elsewhere, undertakes to instruct us. This we like to think is the result of outside contamination!

In the first clinical year the student enters upon the study of clinical radiology. During the first lecture the following points are made in something like this manner:

"You are entering upon the study of clinical radiology. It is not the intention to make radiologists out of you. You will be taught elementary principles and drilled in standard radiological findings and procedures. All this is done in the hope that radiology will aid you in the general study of medicine and surgery. You have already been introduced to the physical principles underlying x-ray machines and the production of x-rays. You will now undertake the study of the practical application of these principles, with relation to both healthy and sick people.

"When you visit a strange city you start out from a square or a circle or a hotel to explore it. From there you explore streets and other squares, enlarging gradually your knowledge of the whole. In these lectures we will introduce you to certain

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‡*Advanced radiology is also taught to graduate students. Contribution to the Queen's Medical Centenary number of the Canadian Medical Association Journal, from the Department of Radiology, Queen's University.*

†*Professor of Radiology, Queen's University.*

**Original paper published in the Canadian Medical Association Journal, Mar. 1954, Vol. 70.*

standard x-ray films, which will be your starting point. First you will learn about your immediate neighbourhood. Then, as you learn the near and familiar things, we will start to explore.

"When you first look at a film you observe its shadows. Do this in some sort of systematic way. Look at a chest film. You look first at the soft tissues surrounding the thorax. Next, inspect the bony parts. Next, look over the heart and mediastinum, and the domes of the diaphragm. Then, observe the lung roots, and the lung fields from above downward."

"If you find something unusual, reflect—Is this normal? Is it an artefact? Is it a congenital anomaly? Is it pathological? If so, what is it?"

Later we teach—"Think of the history and signs and symptoms. Does your idea of a radiological diagnosis make sense, when viewed in the light of the clinical findings? If not—why?

"Try to learn what you can about 'normal findings'. This will be quite difficult. In ordinary practice, unless radiology is studied particularly you may never be quite sure of what constitutes the normal. Leave that to the radiologist.

"Above all, do not try to read clinical signs and symptoms, and your working diagnosis into the film. This is a common clinical error. It is true that in retrospect you will sometimes be able to say 'Now, that possibly is early evidence of the lesion'.

"Avoid the pitfall of labelling curious markings that are within average normal limits as evidence of disease. Once, in so many times, you may be right. The other, very many times, you will be wrong and you will have caused needless anxiety and expense to trusting patients. You must accept the fact that calculated risk of error must be taken. You must learn to deal with average normal findings. Give the radiologist the clinical facts and leave the decision regarding the reading of the film to the radiologist. The clinical decision of course is a different story. The clinical findings may completely over-ride the radiological picture. Don't however let your judgment be biased by your reading of the film."

We try to teach our students enough radiology to enable them to make a tentative diagnosis on ordinary films while waiting for a radiological report, when a radiologist is not readily available. We are very strongly opposed to the teaching that suggests to the student that, as a doctor, he should make his own report upon films. We do encourage consultation with the radiologist. We desire this in all cases, but particularly if the radiological report does not appear to measure up to the clinical findings. Teamwork is recommended.

We explain to students that the standards and elementary things we have taught them are not enough. Experience gained in seeing many, many films is necessary to arrive at proper conclusions and develop good judgment. We feel that very few clinicians, however knowledgeable they may be in their own specialty, develop proper radiological judgment. The limited field of their own practice places limits upon radiological experience. We feel that the clinician who tries to interpret his own films places himself in the position of the radiologist of a couple of decades ago, who of necessity learned painfully by trial and error. We do also readily acknowledge and explain to the student the limits of radiology.

We spend a good deal of time in teaching students to fill in a request for radiological service properly. To some extent, this is a thankless task. Our experience shows that most students do this very well for the first two or three months of their internship. After that many interns, even bright men, tend to become careless. However all in all, the time spent in teaching this is worthwhile. We tell the student that when he gets into practice he will almost surely acquire patients. As a doctor he should demand for his patient the best of care, with as little expense to him as the circumstances permit. One way in which he can do this is to plan carefully what he requires in X-ray service. This is to be written down plainly so that no error can occur.

We stress the necessity for stating on the requisition exactly what is wanted. Errors in requests are pointed out. A broad example would be the difference between asking for "Spine" when what is required is "Lumbosacral spine". Another example would be "Barium Swallow" when what is wanted is an examination of the "Stomach and Duodenum". Still another is a request for the examination of the ankle, when the injury is obviously in the foot. We go into this very thoroughly and in much detail. We also stress the great need for giving a working diagnosis, history and signs and symptoms, if prompt reporting is to be expected. In many cases the history is absolutely essential in arriving at a diagnosis. We feel that we are making headway in this, and that other hospitals and radiologists and their patients will benefit by such instruction of our students.

We tell our students that they should not tell the radiologist what films he is to have made. The doctor should say what part he wants examined and what is to be looked for. Telling a radiologist what films are to be made is equivalent to asking an internist to consult with regard to a patient, and explaining to him that he is to percuss and auscultate the chest.

The students are warned about bothering the technicians, interfering with established routine and persuading them to leave out certain views that may not at the time seem important. The students are told that most radiologists leave their technicians entirely alone when they are working. The radiologist, from experience, has laid down a routine for the technicians to follow. Only in certain cases will the radiologist interfere with this

routine. The technician works more accurately when left alone. Experience has shown that if routine procedures are not carried out, the cost to the patient, not only in money but also in physical disability, may be high indeed.

We teach our students to be careful about ordering needless x-rays. We tell them that experience shows that the new practitioner orders many more x-rays during his first year or two in practice, than he does subsequently when he is treating many more patients.

We demonstrate to students the reasons why portable x-ray films should be requested only when absolutely necessary. The limitations of the portable machine put radiology back twenty years. Many portable films are useless and others may easily lead to wrong conclusions. Films made in x-ray rooms are so much superior that only real necessity should cause portable films to be made. Portable films also cost more.

It is during the student's final year when he is a "shadow" in the department (an important period in his training), that we teach him many of these things, and about practice, and ethics, and medico-legal problems, and all those affairs that revolve around the practice of radiology. We teach our students to be careful and considerate in their handling of old people; to not carry out for little purpose expensive and uncomfortable procedures which only upset the patient and make his final days less happy. We like a nice balance between scientific curiosity and humanity.

I like to tell the students about coming out of a large Canadian hospital one day. I had just seen many patients being put into extremely uncomfortable positions and having all sorts of things done to them for better or for worse. I was in a philosophic mood as I walked down the street. I wondered whether all that doctors do to people was always necessary. Then, as I passed a church I saw displayed this text —

> "In God have I put my trust: I will not be afraid
> What man can do unto me."

It is my fond hope that old graduates of Queen's who take the time to read this paper will remember some of these things I once talked about to them. That they will, having acquired more experience in the ways of medicine and medicine men, be in a better position now to appreciate these teachings is perhaps not too much for which to hope.

THE FIFTH INTER-AMERICAN CONGRESS OF RADIOLOGY

The 5th Inter-American Congress of Radiology which will be held at the Shoreham Hotel in Washington, D.C., April 24 through April 29, 1955 offers an extraordinary opportunity for professional improvement and graduate education which is believed will be profitable and useful to all radiologists.

On April 21, 22, 23, also in the Shoreham Hotel in Washington, D. C., will occur the annual meeting of the American Radium Society. The Congress will convene on Sunday the 24th and extend through April 29th. It will be followed on April 30 by a special course in radioisotopes given by the National Cancer Institute in Bethesda, Maryland. Transportation from Washington to Bethesda will be provided.

All presentations will be bilingual using IBM translating equipment. There will be forty five formal papers and fifteen instructional courses offered. More than 1000 rooms have been reserved at the Shoreham Hotel and the adjacent Sheraton Hotel (formerly the Wardman Park Hotel). The registration fee will be $25.00 until January 1 when it will become $30.00. A book of members will be published with photograph and biographical sketch of each registrant. Application forms may be had from the office of the American College of Radiology, 20 N. Wacker Drive, Chicago 6, Illinois.

RECURRING URTICARIA AND ITS TREATMENT BY IRRADIATION THERAPY

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Kingston, Ontario

"Wonderful relief from the X-ray treatments — while the urticaria occasionally recurs, it has been well controlled with Pyribenzamine," so writes a patient who was treated with X-ray therapy for urticaria six years ago. While the response has not always been as satisfactory as this, the treatment has seemed so worth while that we wish to make our experience known to others of the profession.

Sutton[1] states: "Urticaria, commonly known as nettle rash or hives, is an inflammatory affection characterized by the eruption of whitish, pinkish or reddish weals, caused by transudation of fluid from vessels into tissue spaces in allergic response to the local release of a histamine-like substance." He also states that the lesions are evanescent and give rise to burning, itching and stinging sensations. Weals vary greatly in size and shape. They usually appear suddenly. They are elevations, varying from 1 to 10 mms. in size at first. Frequently they coalesce to form irregular patches. Rarely do they become purpuric; they are followed by temporary pigmentation. Any or all parts of the body may be affected, but the sites of predilection are the lower trunk, buttocks and outer surfaces of the thighs. Ordinarily they persist for several hours and then disappear spontaneously, leaving no trace. Rubbing usually renders the eruptions worse instead of better and may provoke a new outbreak in regions previously unaffected. The mucous membranes, notably those of the larynx, may also be involved.

Two types of the disease are usually seen, the acute and the chronic. The acute is commonly due to some ingested material and disappears within a few days. The chronic is very frequently of undiscoverable origin and may last for years by the constant development of new lesions. This latter type is suitable for radiotherapy.

The list of causal agents is long and includes increased blood capillary permeability or diminished lymph capillary resorption, ingestion of particular foods or drugs, physical agents such as light, cold, scratching, heat sensitiveness, use of serums and bacterial products and even menstruation.

The place of the psychic factor[2], the serum calcium levels in the blood[3], serum potassium increase and diminution[4], low prothrombin levels[5], sluggish biliary function[6] and ragweed[7] have all been studied.

Hopkins and Kesten[8] name thirteen causes of acute urticaria. Under the chronic type they include: —

1. Food (rarely)
2. Focal infection (frequently)
3. Animal parasites.

Kahn and Grothaus[9] in 1940 stated that chronic cases are usually due to foods and that women are more often affected than men.

In the treatment of acute cases, it is usual for the disease to be self-limiting and the eruptions to disappear within three or four days. During this time crops of new lesions are constantly appearing after older ones have subsided. The disease may then disappear permanently or it may recur. Sutton states that while a strange or unusual food may be the provocative factor, some simple article of diet may be the principal offender and it is only after suffering from repeated attacks that the patient may be able to recognize his idiosyncrasy.

Chronic recurrent urticaria sometimes taxes the resources of the medical attendant to the utmost. Careful search should be made for the causative factors. The possibility of parasitic infection must be eliminated. Internal medication capable of causing urticaria must be discontinued. Suspected external allergens must be eliminated. Focal infections should be sought, to be attacked later if necessary. Indications of endocrine imbalance, especially thyroid, are pertinent. The presence of emotional instability should be noted. Inhalant allergens must be removed or determined and adequately treated. Detection of ingested allergens must be achieved, although histamine desentization may be tried, giving tiny doses at first, or antihistamine (Benadryl, Pyribenzamine) palliation prescribed.

Methods of treatment include careful control of ingested material to rule out the one that is causing the urticaria. Water, cane sugar, non-iodized salt are permitted freely, and rice, oatmeal, beef, beets, milk and bread are tested at successive meals. When urticaria follows the eating of a food, that food is tentatively considered to be an allergen and is not eaten again for one week. If, at the end of a week, it again produces urticaria, it is considered to be a proven allergen. The many and varied methods of treatment include the use of cascara and bile salts; pancreatic extract; calcium, epinephrine, pilocarpine, typhoid bacterin, dilute hydrochloric acid and nicotinic acid. Localized applications include carbolized calomine lotion, coal tar, saturated aqueous solution of sodium carbonate or bicarbonate or borax, isotonic baths of sodium chloride, ammonium chloride or magnesium sulfate, and applications of vinegar. Sutton states that some patients find no lasting relief, despite every effort. It was this type of case that caused Dr. S. S. Robinson, of the Department of Medicine, Queen's University, to consider the possibility of treating these patients with X-ray therapy.

In the literature there are several references to the use of irradiation for this disease. There is one reference to treatment by irradiation over the spleen, in which Lawrence[10] claims a cure in two weeks' time of a case of severe generalized urticaria of long standing. Lebon, Le Genissel and Marie[11] treated four cases of chronic urticaria with filtered irradiation over the spleen and obtained complete relief in three cases. Torok and Schein[12] report a complete and permanent cure of a case of urticaria pigmentosa by means of X-ray treatment. The exposures were followed by erythema. Jacob, Michae and H. Fox[13] each reported a case treated with weekly doses of superficial X-ray. In each case immediate relief was obtained, but all the symptoms returned after an interval of three months to one year.

In our own series of cases, we returned to the method of treating over the vegetative nervous system, or the roots of the spinal nerves along the length of the thoracic and lumbar spine, giving each patient a total of 1200 "r" at any one site. The actual detail is as follows. The area over the spine is divided into four portals, 10x15 cms. Two portals are treated with 300 "r" each day, until a total of 1200 "r" has been given over the whole spine.

We quote a few examples herewith:

Case I. A white female, age 48, who had suffered from urticaria for one year. She had onset of hives in August 1947, and suffered continually from February 1948, until she was treated with X-ray in June, 1948. This patient was treated with a regular series of 1200 "r" over the entire spine. At completion of treatment she was free of hives. In her last communication dated September, 1954, six years after treatment, she stated that the treatment had been invaluable to her and she had received wonderful relief. At times of great emotional distress she had some recurrence of the disease but this had been controlled by Pyribenzamine.

Case II. A white female, age 36, with a history of persistent urticaria for six weeks which she believed developed following the taking of penicillin lozenges. The wheals usually appeared in the mornings and lasted for one-half hour, although some lasted throughout the day. She received the regular series of treatment over the entire spine, a total of 1200 "r" over each port. At completion of treatment patient stated that only one hive had appeared in each of the last two days. Seven weeks following treatment patient reported great improvement and that Pyribenzamine controlled the slight amount of urticaria she still had in the mornings. On July 21st, 1949, Dr. Robinson reported that this patient was well, and in her last communication in September 1954, six years later, patient stated that her urticaria was found to be due to sentivity to penicillin but that the X-ray therapy had been most satisfactory in relieving her acute symptoms.

Case III. A white female, age 42, who had attacks of urticaria for thirteen or fourteen years following the death of her father. The last attack began five weeks previous to her hospitalization and she was first treated with X-ray therapy in January, 1953. Examination revealed rounded wheals of various sizes over the arms and legs. Patient received 1200 "r" over the spine. At the completion of treatment patient stated that the hives had been more irritable since treatment began. One month following treatment patient reported that she was well. In October 1954, one and one-half years after treatment, the patient stated that her allergy was cured.

While such a favourable result cannot be looked for in all cases treated, the results of treatment have been encouraging. Considering the difficulty in helping these patients in their distress, it seems worth while to add this further method of control, which has already proven to be of great value.

To evaluate results, we include a table of the ten cases we have treated as follows:

EVALUATION OF RESULTS

No.	Sex	Age	Duration of Symptoms	Number of Series of Treatments	Time elapsed since treatment completed	Results					Remarks
						No Response	*	**	***	Cured ****	
1.	F	48	10 mos.	1	6 yrs.				X		Wonderful relief — recurs occasionally but patient treats it with pyribenzamine.
2.	F	36	6 weeks	1	6 yrs.				X		Most satisfactory in relieving acute condition due to penicillin.
3.	M	53	7-8 yrs.	1	5 yrs.	X					Patient thought the treatments were of no help but patient's physician thought they were.
4.	F	64	5 yrs.	3	2½ yrs.					X	Had recurrence — treated three times — cured to date.
5.	F	42	5 weeks	1	1½ yrs.					X	Patient enthusiastic about treatment. Complete cure.
6.	F	38	7 yrs.	2	4 mos.			X			Recurred but not as severe.
7.	M	46	1 yr.	2	1 yr.			X			Minor recurrence.
8.	M	76	4-5 yrs.	1	13 mos.		X				Physician says there was improvement but patient's wife says 'no'.
9.	M	25	2 weeks	1	1 yr.					X	Cured.
10.	M	21	6 weeks	1	1 yr. 10 mos.					X	Cured.

Summary

In summing up the results of this series, we note that there were five males and five females. They ranged in age groups as follows:

From	20	to	30	years	of	age	— 2
"	30	"	40	"	"	"	— 2
"	40	"	50	"	"	"	— 3
"	50	"	60	"	"	"	— 1
"	60	"	70	"	"	"	— 1
"	70	"	80	"	"	"	— 1

that is, seven cases in the group from 20 to 50 and three from 50 to 80. There were two males and two females with very excellent response. The poorest response was in two males, one aged 76 and the other aged 53. Of the remaining four, while they could not be classed as cured, two females have reported that they have had wonderful relief.

In general, we could say that this method of treatment has proved to be a real boon to these sufferers from a chronic and most irritating condition.

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THE RADIOLOGICAL DIAGNOSIS OF HYDROPS FŒTALIS

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Hydrops fœtalis is the most severe fœtal form of erythroblastosis fœtalis.

The child is usually born dead, with marked œdema and ascites, and enlargement of the liver and spleen; the placenta also, is usually very large and œdematous.

It has been estimated that conditions favouring iso-immunization exist in at least 1 in every 10 pregnancies, but that hæmolytic disease in all its forms only complicates 1 pregnancy in 400, and fatal hydrops fœtalis only 1 in 2000.

Hellman and Irving[5] described a halo-like dark ring around the fœtal skull as a radiographic sign of hydrops fœtalis, but this sign has proved too unreliable for any great significance to be attached to it.

The most valuable sign is the "Buddha" or frog-like attitude of the fœtus as seen in utero, first described by Javert[6].

Rohan Williams[9] enumerated the most significant features of this as:

1. The hips are extended and the knees flexed.
2. The arms project laterally from the body.
3. The fœtus is extended.
4. The lower ribs are splayed.
5. The soft-tissue outline of the distended abdomen may be seen.

Boldero and Kemp[1] commented that they had been unable to see the outline of any of the fœtal soft-tissues in their four cases and pointed out that the "halo" around the head is not present in hydrops fœtalis, as the subcutaneous fatty layer is infiltrated with fluid. This should apply to the subcutaneous tissue in other parts of the fœtus, yet in two of our cases fœtal soft-tissues were very clearly outlined by their subcutaneous fat, and in one case the soft-tissue outline of the distended abdomen could be clearly seen on the original films (Cases 1 and 3.)

These authors are satisfied that while the "Buddha" attitude is evidence of advanced hydrops, a diagnosis can confidently be made in the presence of the following factors:

1. Straightening of the normal kyphosis of the fœtal spine with extension of the neck.
2. Radiographic evidence of hydramnios.
3. Evidence of iso-immunization of the mother.

They state that the straight position of the fœtus is purely a mechanical adaptation to the distension of the abdomen, and that other intra-uterine structures such as a second fœtus, or abnormally large placenta, or other fœtal abnormalities such as intra-abdominal or thyroid tumours may be responsible for the appearances.

I have noted in two of our cases a lateral curvature of the dorsal and lumbar spine in association with extension of the fœtus.

This lateral curvature is presumably due to the hydropic fœtus accomodating itself to the uterine cavity by this means as it is unable to do so by a normal kyphosis.

A generalized fœtal osteopetrosis has been described, and attributed partly to erythroblastic changes in the bone marrow, and partly to technical factors.

We have been unable to demonstrate these changes pre-natally. Nevertheless, two of the hydropic fœtuses were radiographed after delivery and did show increased density of the limb bones.

CASES

Case 1.

E.D.D. approximately 10 12 53.

Two previous stillbirths, but details are not available.

6 11 53 — antibodies present in the maternal blood specimen.

X-rays taken on that day showed a single fœtus presenting as a vertex. The spine in the dorso-lumbar region was straight, but elsewhere was flexed. The fœtus was in the "Buddha" position. The subcutaneous fatty layer was seen clearly outlining the fœtal soft-tissues and on the original films the outline of the distended abdomen was plainly visible. There was evidence of hydramnios.

12 11 53 — the patient was delivered of a macerated, still-born hydropic fœtus, and of a very large, soft hæmorrhagic placenta.

Fig. 1 — Case 1 — "Buddha" position of the fœtus. A large soft-tissue shadow is seen at the uterine fundus, consisting of a large placenta and excess liquor amnii.

Fig. 4 — Case 1 — Macerated hydropic fœtus. The abdomen is distended and the umbilical cord is thick and œdematous. The thin pale skin is peeling off in large sheets. Œdema of the neck, although present, is not gross.

Case 2.

E.D.D. — 29/10/53.

September, 1944, — delivered of a normal male child.

June, 1952, — pregnant; antibodies present in the maternal blood specimen.

July, 1952, — delivered of a child suffering from erythroblastosis fœtalis, which died 36 hours after birth.

24/7/53 — pregnant; antibodies strongly present in a maternal blood specimen. X-rays taken on that day showed a single fœtus presenting as a vertex with the spine extended, but showing lateral curvature; the neck was extended. The fœtus was in the "Buddha" position.

There was no definite evidence of hydramnios.

29/7/53. — the patient was delivered of a grossly macerated, still-born hydropic fœtus, and of a large hæmorrhagic placenta.

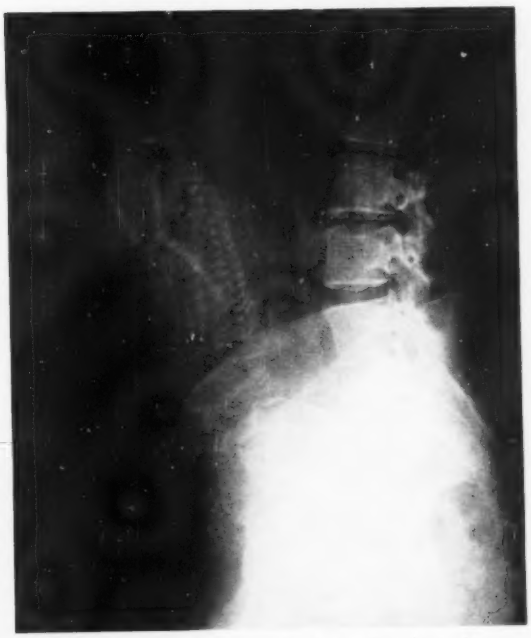

Fig. 3 — Case 2 — Lateral view showing the extended fœtal spine and neck. The fœtus was in the "Buddha" position, seen antero-posteriorly.

Case 3.

E.D.D. approximately 1/6/53.

13/10/47 and 13/6/51—delivered of normal live male children.

April, 1953, pregnant; antibodies present in the maternal blood specimen.

8/5/53 — X-rays showed a single fœtus presenting as a vertex with the spine extended in the dorso-lumbar region and slightly extended in the cervical region. Slight lateral curvature was present in the dorso-lumbar region. The fœtus was in the "Buddha" position. The cranial bones showed a moderate degree of over-riding; the subcutaneous fatty layer was clearly visualized. Hydramnios appeared to be present.

12/5/53. — the patient was delivered of a macerated hydropic stillborn fœtus and of a large placenta.

Fig. 2 — Case 3 — "Buddha" position with lateral curvature of the dorso-lumbar spine. This region was extended when seen in the lateral projection. The subcutaneous fatty layer is seen outlining the soft tissues.

Case 4.

E.D.D. approximately 10/1/54.

The patient had previously been delivered of three normal children, followed by a stillbirth at 7 months, the details of which are not known.

November, 1953 — pregnant; antibodies strongly present in a blood specimen.

7/12/53 — X-rays showed a single fœtus presenting as a breech. The spine was extended. The fœtus was in the "Buddha" position. Marked over-riding of the cranial bones was present. There was no definite evidence of hydramnios.

27/12/53 — delivered of a macerated hydropic fœtus. The placenta was not markedly enlarged.

Case 5.

E.D.D. 23/2/54.

The patient had been delivered of five normal children between 1939 and 1945.

1946 — delivered of a full-term child which died 2 days after birth; the cause of death is not known.

1947 — delivered of a full-term stillborn child; the cause of death in not known.

1948 — delivered of a child requiring replacement transfusion for survival.

1949—aborted at 4 months gestation; cause not definitely known.

3/5/50 — pregnant; antibodies present in a blood specimen.

26/5/50 — aborted a macerated fœtus at seven months gestation.

2/1/54 — pregnant; the patient had never felt fœtal movements, and the uterus had ceased to enlarge after 6 months pregnancy. Antibodies were present in a blood specimen.

X-rays showed a single fœtus of a size compatible with a gestation period of 20-24 weeks. The spine in the dorso-lumbar region was markedly extended, but was flexed elsewhere. The fœtal skull bones showed marked over-riding and collapse. There was no definite evidence of hydamnios.

4/1/54 — delivered of a grossly macerated stillborn fœtus with moderate abdominal distension, which conformed to Potter's description of "mild fœtal hydrops with intra-uterine death", though histologic confirmation could not be obtained because of the degree of maceration.

Case 6.

E.D.D. 16/4/54.

In 1940 and 1942, the patient had been delivered of normal female children.

1944 — delivered of a full-term stillborn child, which was jaundiced; the cause of death is not known.

1948 — labor was induced at 28 weeks, because of toxæmia; further details are not known.

29/1/54 — The present pregnancy had been uneventful. Fœtal movements were felt and fœtal heart sounds heard.

Antibodies were present in a maternal blood specimen.

The patient was given cortisone.

X-rays showed a single fœtus compatible with a gestation period of 24-28 weeks.

The spine in the dorso-lumbar region was extended, but flexed elsewhere.

The fœtus was in the "Buddha" position.

There was no over-riding of the cranial bones, or other evidence of fœtal death.

Hydramnios was present.

15/2/54 — sudden painless gush of bright red blood.

16/2/54 — membranes ruptured.

The patient was delivered of a moderately hydropic fœtus which survived for 25 minutes.

Case 7.

E.D.D. 16/7/54.

1937 — delivered of a normal child.

1943 — delivered of a child suffering from spina bifida, which died after 1 day.

1945 — delivered of a child with the cord around the neck; the child died at birth.

1948 — Cæsarian section performed at 28 weeks because of renal disease. The child did not survive.

April, 1954 — The patient was developing marked hydramnios and increased intra-uterine pressure and had early toxæmia.

Antibodies were strongly present in a maternal blood specimen.

22/4/54 — X-rays showed a single fœtus presenting as a vertex. No definite over-riding of the cranial bones was present.

The fœtus was in the typical "Buddha" position and the spine was extended in the dorso-lumbar and cervical regions.

29/4/54 — Cæsarian section was performed and a grossly hydropic, dead, fœtus delivered together with a large friable placenta.

Case 8.

E.D.D. 30/9/54.

1937 — delivered of a normal child.

During the next 12 years, she had 1 stillbirth and 2 miscarriages; the cause for these deaths is unknown.

1950 — delivered of a child requiring replacement transfusion for survival and who is alive and well at the present time. Maternal antibodies were present during the pregnancy.

1954 — pregnant; antibodies were strongly present in the maternal blood.

27/7/54 — X-rays showed a single fœtus in utero presenting as a vertex. Marked over-riding of the cranial bones was present. The spine was extended in the dorso-lumbar and cervical regions. The fœtus was in a marked "Buddha" position.

Mid-August, 1954 — delivered of a grossly macerated, dead, hydropic fœtus.

Case 9.

E.D.D. 27/1/55.

1945 and 1947 — patient had miscarriages; details are not known.

1948 — intra-uterine death at term from erythroblastosis fœtalis; the details are not known.

December, 1953 — pregnant; antibodies were strongly present in a maternal blood specimen.

Intra-uterine death occured at 36 weeks gestation.

The mother was delivered of a grossly macerated fœtus.

26/11/54 — pregnant; antibodies were strongly present in a maternal blood specimen.

X-rays showed a single fœtus in utero in a very marked "Buddha" position, with the spine extended.

Hydamnios was present.

There was no over-riding of the cranial bones.

Fœtal heart sounds were still present.

2/12/54 — patient went spontaneously into labor and was delivered of a grossly hydropic dead fœtus.

Discussion:

In all the above-described cases of hydrops fœtalis diagnosed before delivery, extension of the dorso-lumbar spine was demonstrated radiologically, and maternal iso-immunization was present. These would therefore appear to be the most valuable criteria.

In eight cases the "Buddha" position was present and was of great diagnostic value.

Occasionally, a normal fœtus assumes a posture closely resembling this position; but in such circumstances the hips are well flexed and the arms close to the body. Particular attention should thus be paid to these features before a fœtus is stated to be in the "Buddha" position and, therefore, hydropic.

The diagnostic criteria of Kemp and Boldero as described were also of help, although extension of the neck was not an invariable finding, and hydramnios was not demonstrated in every case.

Despite the œdematous infiltration of the subcutaneous fatty layer that occurs in hydrops fœtalis, this layer was clearly seen in two of our cases, and in one was sufficient to outline the distended abdomen.

In two cases lateral curvature of the dorsolumbar spine was seen in association with the loss of the normal kyphosis, this presumably being because of the inability of the fœtus to flex itself in the normal manner.

The "halo" sign was not seen in any case.

In none of the cases could osteopetrosis be demonstrated pre-natally, although it was apparent in the films taken of two of the fœtuses post-natally.

Acknowledgements:

I should like to express my thanks to Professor Cannell and Drs. Mann, Rogers, Spring, and Gerred for the use of their case records, and to Dr. Rotenberg of the New Mount Sinai Hospital, Toronto, and Dr. Kinch for asking me to comment pre-natally on Cases 4 and 9.

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ENQUIRY SERVICE

The British Columbia Radiological Society wishes to extend its good offices to Radiologists considering practice in British Columbia. This Society maintains an active interest in Provincial developments, in an effort to improve standards and promote equitable conditions of employment.

More than forty members of the Society, located throughout the Province, are well informed of local conditions. This information, as well as assistance and advice, may be obtained by writing to "The Secretary of the B.C. Radiological Society, Suite 1027, 736 Granville Street, Vancouver 2, B.C."

LA RADIOLOGIE À LA CROISÉE DES CHEMINS

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"The time is past for accepting the roentgenologist, who peddles X-ray therapy by the dose, as a therapeutic radiologist."

Douglas Quick.

Le temps est maintenant loin où un radiologiste pouvait espérer s'assimiler les connaissances applicables à l'utilisation des rayons X au domaine entier de la médecine. Depuis 25 ans, la Physique des radiations a progressé à pas de géant. A tel point que la structure de nos concepts scientifiques, philosophiques, sociaux et économiques en a été profondément ébranlée. Il ne s'agit pas simplement ici de la foudroyante mise à profit des découvertes récentes, mais d'un véritable bouleversement des données sur lesquelles l'homme de culture moyenne avait acquis une habitude séculaire de compter. L'Electronique et les radiations en transformant la production, la guerre, l'habitation, les transports, les communications et d'une manière générale les moyens d'explorer et d'exploiter l'univers, ont transformé en même temps nos modes traditionnels de pensée et d'expression, jusque dans des domaines aussi distants que l'art et la morale. Aucun aspect de l'activité humaine n'a été épargné.

La Médecine ne devait naturellement pas rester étrangère à ce mouvement. Aux timides essais diagnostiques des débuts, où on se contentait de tirer parti des différences plus ou moins grossières d'opacité, a succédé des techniques fines utilisant des connaissances d'anatomie radiologique de plus en plus complètes, des artifices de contraste de plus en plus subtils et un jeu de contrôles automatiques qui défie l'imagination. C'est toutefois dans le champ de la thérapeutique que les possibilités apparaissent les plus vastes. Mais c'est là aussi que la médecine classique hésite le plus à s'engager, et que les radiologistes sont le moins prêts à prendre en mains la cognée. La raison évidente de cette hésitation du corps médical et de cette impréparation des radiologistes est que la tâche s'avère immensément lourde. La multiplicité, l'efficacité et la complexité des radio-outils qui nous sont tombés du ciel au cours du dernier quart de siècle ont de quoi rendre perplexe et réticent. Les isotopes radioactifs, les supervoltages, les accélérateurs de particules, la bombe atomique et les subtilités de la dosimétrie moderne sont venus jeter le désarroi dans l'âme de l'honnête praticien général de la radiologie, qui avait réussi jusque là, tant bien que mal, à faire face à la musique.

Pour parer à l'élargissement formidable et subit du champ de la radiothérapie, nos chefs ont décidé d'urgence d'abandonner la totalité des problèmes physiques aux physiciens, et la majorité des problèmes cliniques, aux cliniciens des autres spécialités, espérant ainsi pouvoir conserver intacte et robuste, l'association cinquantenaire et vénérable du radiodiagnostic et de la radiothérapie. Malheureusement, ces braves gens ont oublié, dans leur précipitation, d'imaginer la position cocasse du radiothérapeute recevant de la gauche des diagnostics qu'il ne peut pas défendre, et distribuant de la droite des traitements dont il ne peut pas rendre compte.

Il est clair que nous sommes engagés dans la mauvaise voie et il est clair aussi qu'il n'y a pas plusieurs moyens d'en sortir. A la question posée à la conférence du Collège Américain de Radiologie: "Qu'est-ce qui manque à la formation du résident en radiothérapie", il n'y a qu'une réponse à apporter: il manque au moins 4 ans d'études consacrées *exclusivement* aux problèmes propres de la radiothérapie. Ces problèmes sont par ordre d'importance, 1) la clinique médicale et chirurgicale au complet, 2) la physique radiologique au complet, 3) la radiobiologie au complet, 4) l'anatomie pathologique macroscopique et microscopique au complet et 5) la technique radiothérapique au complet. Hors de là point de salut pour la radiothérapie à venir. Or, à moins d'être extraordinairement doué, l'essentiel de ces connaissances ne peut s'acquérir en moins de quatre ans. C'est là un minimum qui va de pair avec les circonstances et avec les exigences d'autres spécialités où le bagage scientifique indispensable s'avère moins étendu.

Le dessein de former des radiologistes à la fois compétents en diagnostic et en thérapeutique est périmé et indéfendable à tous points de vue. J'irai même plus loin en disant que c'est une hérésie et un outrage à la logique. Del Regato a effleuré le problème de l'incompatibilité des disciplines entre la carrière de radiodiagnosticien et celle de radiothérapeute. J'essaierai de préciser en soulignant que le traitement, quel qu'il soit, est toujours une entreprise de personne à personne. Il aspire à dégager, d'une formule générale, le cas particulier du malade en cause. Le traitement est un problème qui se rattache à l'analyse. Le diagnostic radiologique au contraire vise à intégrer le cas du malade dans une formule générale: c'est plutôt un problème de synthèse. L'art propre à toute forme de diagnostic morphologique consiste invariablement à fondre l'image du malade dans un certain cadre; l'art du traitement consiste au contraire à l'en tirer. Au terme du premier, le malade a cessé d'exister, alors qu'au terme du second, le malade demeure seul, en pleine lumière.

La radiodiagnostic, dans sa discipline la plus pure, ne saurait, sous peine de déchoir, dépendre de données cliniques. S'il pouvait en être autrement, il n'y aurait plus de raison de vouloir en faire une spécialité. Quant à la thérapeutique qui se respecte, elle entendra toujours, comme il se doit, être l'auteur de sa propre clinique. Deux idéals, deux tournures d'esprit, deux disciplines qu'il serait téméraire de combiner et puéril de confondre!

La radiothérapie, c'est une médecine générale où les rayons remplacent, à l'occasion, les produits chimiques et le bistouri.

BOOKS RECEIVED

Books received are acknowledged in this department, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interest of our readers and as space permits.

The Auxiliary Heart, by William Walter Wasson, The Ryerson Press, Toronto, 1955.

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